

Appl. No. 10/693,896
Amendment dated: April 26, 2005
Reply to OA of: February 1, 2005

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1(original). A method of forming a plurality of bumps on a wafer having an active surface, wherein the wafer further includes a plurality of bonding pads formed on the active surface and a passivation layer formed on the active surface that exposes the bonding pads, the method comprising the steps of:

forming an under bump metallurgy layer over the active surface of the wafer, wherein the under bump metallurgy layer covers both the bonding pads and the passivation layer;

patterning the under bump metallurgy layer so that a residual portion of the under bump metallurgy layer remains over each of the bonding pads;

forming a polymer layer over the active surface of the wafer, wherein the polymer layer has a plurality of openings that expose the residual portion of the under bump metallurgy layer;

disposing a plurality of solder balls into each of the openings, wherein each of the solder balls has a flux material formed on a surface of each of the solder balls;

performing a reflow process so that the solder balls are bonded to the residual portion of the under bump metallurgy layer; and

removing the polymer layer.

2(original). The method of claim 1, wherein the under bump metallurgy layer comprises an adhesive layer and a metallic layer formed on the adhesive layer.

3(currently amended). The method of claim 2, wherein a material constituting the adhesion adhesive layer is selected from a group consisting of titanium, titanium-tungsten alloy, chromium, chromium-copper alloy, copper and tantalum.

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4(original). The method of claim 2, wherein a material constituting the metallic layer is selected from a group consisting of nickel-vanadium alloy, titanium nitride, tantalum nitride, nickel, chromium-copper alloy, chromium, copper and palladium.

5(currently amended). The method of claim 2, wherein a material constituting the solder balls includes a lead-tin alloy.

6(original). The method of claim 2, wherein a material constituting the solder balls includes a lead-free alloy.

7(currently amended). The method of claim [[5]]2, wherein a material constituting the solder balls is selected from a group consisting of lead, gold, silver, copper, magnesium, bismuth, antimony, indium and zinc.

8(original). The method of claim 1, wherein a material constituting the bonding pads is selected from a group consisting of copper and aluminum.

9(original). The method of claim 1, wherein the polymer layer is a photoresist layer.

10(original). The method of claim 1, wherein the polymer layer is a dry film.

11(original). The method of claim 1, wherein the polymer layer is formed by spin-coating.

12(original). The method of claim 1, wherein the flux material is solid-like.

13(original). The method of claim 1, wherein the flux material is in a solid state.